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NERC standards critical to Western's success

A major indicator of the health of an electrical grid is system frequency. This frequency is maintained at the correct level by continuously balancing generation with load. This matching function is the responsibility of "Control Areas." A Control Area is a specific portion of the electrical grid responsible for matching generation to load. Western operates four Control Areas—two in Upper Great Plains Region, one in Rocky Mountain Region and one in Desert Southwest Region. If perfect balance is maintained, system frequency is 60 Hertz. If generation is inadequate, system frequency will fall. In case of over-generation, frequency will rise.

After rigorous research, standards were adopted in February 1998 by the North American Electric Reliability Council to measure how well generation is balanced to load. These standards are called Control Performance Standard 1 and Control Performance Standard 2.

CPS1 is the measure of short-term error between load and generation. If a Control Area exactly matches generation to load, or if the mismatch causes system frequency to be driven closer to 60 Hz, CPS1 performance will be good. If the Control Area has a mismatch between generation and load that causes system frequency to be driven further from 60 Hz, CPS1 performance will be degraded.

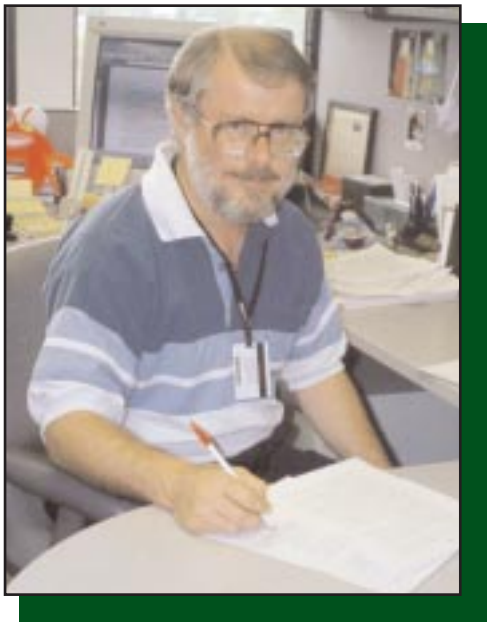
CPS2 is used to place boundaries on CPS1 to prevent adverse power flows. It prevents excessive generation/load mismatch even if the mismatch is in the correct direction. Large mismatches can cause excessive power flows and potential transmission overloads between areas with over-generation and insufficient generation. If the boundary imposed by CPS2 is exceeded, CPS2 performance will be degraded.

Measureable and normal

CPS1 and CPS2 are measurable and normal functions of each Control Area's Energy Management System. Measurements are taken continuously with data recorded for each minute of operation.

Minimum acceptable performance level for CPS1 is 100 percent. Perfect control results in a performance level of 200 percent, although under certain conditions this level may be exceeded. Minimum performance level for CPS2 is 90 percent. Perfect performance would result in a performance level of 100 percent.

All Control Areas in North America, including Western's, are required to report CPS1 and CPS2 performance to NERC monthly.



***Mark Meyer**, power operations specialist at CSO, looks over a document that defines performance standards.*

Performance achievability

Control Areas conscientious about matching generation with load do not have a problem meeting CPS1 and CPS2 performance criteria. This is accomplished by having well-maintained control equipment and system operators paying close attention to performance. It also requires responsive generating units. To meet these requirements, Western coordinates closely with Bureau of Reclamation and Corps of Engineers generating plants.

May 1998 is the latest month for which NERC posted CPS1 and CPS2 performance data. During that month, 132 Control Areas were in compliance for CPS1 with an average score of 174.14 percent. For CPS2, 129 Control Areas were in compliance with an average score of 94.21 percent. All four Western Control Areas were in compliance with an average CPS1 score of 207.07 percent and CPS2 score of 98.4 percent.

WSCC's Reliability Management System includes satisfactory NERC CPS1 and CPS2 performance as part of the mandatory compliance criteria.

Western makes honor roll

Western, as well as 109 other utilities nationwide, completed NERC's Generating Availability Data System report for 1998. Western was congratulated and placed on NERC's GADS Honor Roll for timely and accurate reporting of availability data for 39 Corps of Engineers and Bureau of Reclamation hydrogenerating units in the Upper Great Plains Region (generating agencies handle reporting in Western's other regions).